

WHAT IS CLAIMED IS:

- 1 1. A method of imaging a target site with a stereo imaging system, the
2 method comprising:
3 capturing a right and a left optical image of the target site;
4 transforming the right and the left optical images into regulatable
5 information;
6 converting the regulatable information into opposed images of the target
7 site displayed on a stereo display of the stereo imaging system, one of the opposed images
8 being associated with the right optical image and the other of the opposed images being
9 associated with the left optical image; and
10 regulating the regulatable information to cause the positions of the target
11 site displayed on the opposed images to change relative to each other.
- 1 2. A method as claimed in claim 1, wherein the transforming step
2 includes projecting the right and the left optical images separately onto photosensitive
3 surfaces.
- 1 3. A method as claimed in claim 2, wherein the transforming step
2 further includes reading information from the photosensitive surfaces so as to obtain
3 digital information associated with the right and the left optical images, respectively.
- 1 4. A method as claimed in claim 3, wherein the stereo imaging system
2 includes two Charge Coupled Devices which define the photosensitive surfaces, and a
3 Camera Control Unit associated with each Charge Coupled Device, the method including
4 projecting the right and the left optical images onto the respective photosensitive surfaces
5 of the Charge Coupled Devices and permitting the Camera Control Units to read
6 information from the Charge Coupled Devices so as to obtain the digital information
7 associated with the right and the left optical images, respectively.
- 1 5. A method as claimed in claim 1, wherein the capturing step
2 includes guiding the right and the left optical images along separate optical paths defined
3 by an endoscope.

1 6. A method as claimed in claim 1, wherein the converting step
2 includes displaying each of the opposed images on a separate image display.

1 7. A method as claimed in claim 1, which further includes guiding the
2 opposed images from the stereo display along optical paths to a viewer such that the
3 opposed images are guided separately to a user's right and left eyes at the viewer.

1 8. A method as claimed in claim 1, wherein the regulatable
2 information comprises digital information, the regulating step including arranging the
3 digital information into a digital information array associated with the right optical image
4 and a digital information array associated with the left optical image.

1 9. A method as claimed in claim 8, wherein the regulating step further
2 includes selecting a portion of at least one of the digital information arrays and the
3 converting step includes converting the digital information defined by the selected portion
4 into one of the opposed images so as to adjust the position of the target site as displayed
5 in that image relative to the target site as displayed in the other image.

1 10. A method as claimed in claim 9, wherein the regulating step
2 includes selecting a portion of each of the digital information arrays and the converting
3 step includes converting the digital information defined by the selected portions into the
4 opposed images so as to adjust the position of the target site, as displayed in the images,
5 relative to each other.

1 11. A method as claimed in claim 9, wherein the portion is selected to
2 cause the target site as displayed in the one of the opposed images to be positioned at a
3 different lateral position relative to the target site as displayed in the other image so as to
4 vary the working distance of the image capture device.

1 12. A method as claimed in claim 9, wherein the portion is selected to
2 cause the target site as displayed in the one of the opposed images to be positioned at a
3 different lateral and vertical position relative to the target site as displayed in the other
4 image so as to align the displayed images with each other.

1 13. A method of aligning opposed images of a stereo imaging system,
2 the method comprising:
3 capturing a right and a left optical image of a target site;
4 transforming the right and the left optical images into digital information
5 in the form of digital arrays associated with each of the right and the left optical images;
6 converting the digital information associated with each digital array into
7 opposed images of the target site displayed on a stereo display of the stereo imaging
8 system; and
9 isolating a portion of at least one digital array so that only digital
10 information associated with the isolated portion of that array is converted into an
11 associated image, the isolated portion being selected so as to align the opposed images
12 displayed on the stereo display.

1 14. A method as claimed in claim 13, in which the stereo imaging
2 system includes a stereo image capture device having a viewing end for capturing the
3 right and the left optical images, the method further including positioning a target device
4 at a predetermined distance from the viewing end and using an image of a target of the
5 target device displayed in the opposed images to align said images.

1 15. A method as claimed in claim 13, in which the stereo imaging
2 system includes two opposed monitors for displaying the opposed images, each monitor
3 including at least two inputs operatively connected to corresponding digital information
4 outputs so that information is passed from the outputs to the inputs to display the image
5 on the monitors, the method including operatively connecting at least one output
6 corresponding to the one monitor with an input of the other monitor so as to feed digital
7 information associated with both digital arrays to the one monitor thereby to cause that
8 monitor to display both the image associated with the left and the image associated with
9 the right optical image thereon.

1 16. A method as claimed in claim 15, in which the two images are
2 caused to be distinctively colored.

1 17. A method as claimed in claim 15, which includes selectively
2 isolating portions of the digital arrays to cause the two images to be superimposed on the
3 monitor thereby to align the images.

1 18. A method of adjusting the stereo working distance of a stereo
2 imaging system, the method comprising:
3 capturing a right and a left optical image of a target site;
4 transforming the right and the left optical images into digital information
5 in the form of digital arrays associated with each of the right and the left optical images;
6 converting the digital information associated with each digital array into
7 opposed images of the target site displayed on a stereo display of the stereo imaging
8 system; and
9 isolating a portion of at least one digital array so that only digital
10 information associated with the isolated portion of that array is converted into an
11 associated image, the isolated portion being selected to cause the working distance to
12 vary.

1 19. A stereo imaging system comprising:
2 a stereo image capture device for capturing a right and a left optical image
3 of a target site;
4 an image transformer operatively associated with the image capture device
5 for transforming the right and the left optical images into corresponding regulatable
6 information;
7 two display areas operatively associated with the image transformer for
8 displaying a right and a left image derived from the corresponding regulatable
9 information; and
10 a processor arranged to regulate the regulatable information to cause the
11 positions of the target site displayed on the opposed images to change relative to each
12 other.

1 20. A system as claimed in claim 19, wherein the stereo image capture
2 device is in the form of an endoscope.

1 21. A system as claimed in claim 19, wherein the image transformer
2 includes a photosensitive surface.

1 22. A system as claimed in claim 21, wherein the image transformer
2 includes at least one Charge Couple Device defining the photosensitive surface.

1 23. A system as claimed in claim 22, where the image transformer
2 further includes a Camera Control Unit operatively associated with the Charge Couple
3 Device.

1 24. A system as claimed in claim 19, wherein the corresponding
2 regulatable information comprises digital information and wherein the processor is
3 arranged to define a digital information array associated with each of the optical images.

1 25. A system as claimed in claim 24, which includes a controller
2 operatively associated with the processor to enable selective isolation of distinct portions
3 of at least one of the digital information arrays.

1 26. A system as claimed in claim 25, wherein the processor is arranged
2 to cause only a selected distinct portion of the digital information array to define the
3 image displayed on one of the display areas.

1 27. A method of imaging a target site with a stereo imaging system, the
2 method comprising:
3 capturing first and second optical images of the target site as regulatable
4 information, the first and second optical images defining a positional relationship;
5 manipulating the regulatable information to define an altered positional
6 relationship; and
7 converting the manipulated regulatable information into left and right
8 images of the target site and displaying the left and right images on a stereo display of the
9 stereo imaging system.

1 28. The method of claim 27, wherein the information comprises digital
2 information.

1 29. A method of aligning opposed images of a stereo imaging system,
2 the method comprising:
3 capturing a right and a left optical image of a target site;
4 transforming the right and the left optical images into regulatable
5 information associated with each of the right and the left optical images;

6 converting the regulatable information into images of the target site
7 displayed on a stereo display of the stereo imaging system; and
8 regulating the regulatable information to align the images displayed on the
9 stereo display.

1 30. A method of adjusting the stereo working distance of a stereo
2 imaging system, the method comprising:
3 capturing a right and left optical image of a target site;
4 transforming the right and the left optical images into regulatable
5 information associated with each of the right and the left optical images;
6 converting the regulatable information into images of the target site
7 displayed on a stereo display of the stereo imaging system; and
8 regulating the regulatable information to adjust the stereo working distance
9 of the stereo imaging system.

1 31. A method of producing a stereo image of a site at a predetermined
2 position, the method comprising:
3 aiming a viewing end of a stereo endoscope at the site so that a first image
4 of the site is passed along a first optical path of the stereo endoscope and a second image
5 of the site is passed along another optical path of the stereo endoscope;
6 converting said first and second images into corresponding first and
7 second sets of electronically readable information;
8 causing the first set of electronically readable information to be transferred
9 into a first visual image on a first display area;
10 causing the second set of electronically readable information to be
11 transferred into a second visual image on a second display area; and
12 directing the images from the display areas to the predetermined position
13 so that, at the predetermined position, the images together form a stereo image viewable
14 by an operator.

1 32. A method as claimed in claim 31, wherein said converting action
2 comprises routing the first image onto a first photosensitive surface area and routing the
3 second image onto a second photosensitive surface area, and converting said first and
4 second photosensitive surface area images into said corresponding first and second sets of
5 electronically readable information.